Charge for the Director's CD-1 Review of the NOvA Project February 28 – March 2, 2006

This charge is for the Committee to conduct a Director's CD-1 Review of the proposed NOvA project at Fermilab. The review is to assess the project's efforts at meeting the requirements for DOE to approve CD-1. CD-1 is defined as "Approve Alternative Selection and Cost Range". As part of this assessment the questions listed in Attachment 1 of this charge should be addressed. Additionally the committee is to review and comment on Project's response and actions taken on the recommendations from the Director's Preliminary Review of NOvA on July 18-20, 2005. Constructive comments on presentation content, format, and style are also requested.

Approval of CD-1 by DOE officials is based on a Conceptual Design documented in Conceptual Design Report (CDR) for the project. The project scope and preliminary baseline range for the cost and schedule are to be defined at this point in the project. Some additional documents that support the CD-1 determination are a Preliminary Project Execution Plan (PEP), a Preliminary Project Management Plan (PMP) and the Preliminary Hazard Analysis report. The technical part of the review will focus on the conceptual designs for the Detector and Building/Site. It will answer the questions, will these designs meet the requirements and specifications and are the designs sound. The cost, schedule and scope ranges are usually based on an initial set of documentation such as the following: WBS – Work Breakdown Structure, WBS Dictionary, BOE – Basis of Estimate documentation, risk and contingency analyses, RLS – Resource Loaded Schedule, and time phased funding and cost profiles. The committee is asked to review each of these items, for quality, completeness, and accuracy. Furthermore, the committee is asked to review and assess the quality of and comment on the additional formal project management documentation required for CD-1 approval.

Fermilab and NOvA are planning for CD-3 approval to allow construction to start the first quarter of FY2008. To achieve this goal NOvA will need a DOE CD-2 Review by the fall of 2006. To advance the development of NOvA's Preliminary & Final Design effort and Value Management activities, PED (Project Engineering and Design) Funds are being requested to start in FY2007. Therefore, the committee is asked to comment as appropriate on NOvA's status regarding plans for utilizing PED Funding. Again, appropriate constructive comments on what remains to be done are requested.

Finally, the committee should present findings, comments, and conclusions at a closeout meeting with NOvA's and Fermilab's management and provide a written report soon after the review.

Attachment 1 - Charge for the Director's CD-1 Review of the NOvA Project

Technical

- Are the requirements that form the basis for the design and engineering phase of the project clearly documented?
- Does the conceptual design satisfy the performance requirements?
- Has a Conceptual Design Report (CDR) been developed that includes a clear and concise description of the alternatives analyzed, the basis for the alternative selected, how the alternative meets the approved mission need?
- Has the Project employed value management as early as possible in the project development and design process so recommendations can be included in the planning and implemented without delaying the progress of the project or causing significant rework of completed designs?
- Has the Project identified specific standards which include codes, standards, regulations, and needed discipline (electrical, mechanical, nuclear, fire, radiation control, etc.) requirements to procure, fabricate, construct, inspect, and test the components, subsystems, and systems?
- Can the conceptual design be built? Does the design meet the technical specifications? Is it a reasonable design?

Cost

- Does the conceptual design report and supporting documentation adequately justify the stated cost range and project duration?
- Has the project developed a life-cycle cost estimate that includes costs for research and development, construction, operations and decommissioning?
- Do the cost estimates for each WBS (or cost) element have a sound documented basis and are they reasonable?
- Does an obligation profile exist?
- Has the project established a realistic cost estimate for the work associated with performing Preliminary Design, Final Design and Value Management activities to request an appropriate level of PED (Project Engineering and Design) Funds?

Schedule

- Does the Project's Work Breakdown Structure (WBS) define the total scope of the project as a product-oriented family tree composed of hardware, software, services, data, facilities and other components?
- Is a schedule developed and resource loaded?
- Are the activity durations reasonable for the assumed resources?
- Is the schedule duration feasible for the resources assigned to accomplish the tasks?
- Does the schedule contain appropriate levels of milestones, sufficient quantity of milestones for tracking progress and do they appear to be achievable?
- Does the schedule include activities for design reviews, which include assessment of the designs readiness for procuring prototypes and preproduction materials?
- Has the activities associated with the Preliminary Design, Final Design and Value Management activities been appropriated identified in the schedule so they can be properly tracked if PED funds are used?

Management

- Is there an appropriate management organization structure in place with the responsibilities defined and documented for the scope of work?
- Does the proposed project team have adequate management experience, design skills, and laboratory support to produce a credible technical, cost, and schedule baseline?
- Are ES&H aspects being properly addressed and are future plans sufficient given the projects current stage of development?

- Is the documentation required by DOE O 413.3 in order and ready for Approval of CD-1?
- Are there adequate staffing resources available or planned for this effort?
- Is there a funding plan available or proposed to meet the resource requirements to realize the project?
- Has Risk Management been performed which includes risks assessments on each potential design alternative as a factor in selecting which alternative is to be pursued?